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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/625,993	07/26/2000	Kyoko Higashino	Q60072	8492
7590	11/28/2003		EXAMINER	
Sughrue Mion Zinn MacPeak & Seas 2100 Pennsylvania Avenue NW Washington, DC 20037			GONZALEZ, JULIO C	
			ART UNIT	PAPER NUMBER
			2834	

DATE MAILED: 11/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/625,993	HIGASHINO ET AL.
	Examiner Julio C. Gonzalez	Art Unit 2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 14 October 2003.

2a) This action is FINAL.      2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-5 and 9-18 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-5 and 9-18 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All b) Some \* c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) The translation of the foreign language provisional application has been received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ .
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .	6) <input type="checkbox"/> Other: _____ .

## **DETAILED ACTION**

This Office Action is in response to the Reply Brief sent on 09/30/03. The finality of the Office Action sent on 07/08/02 has been withdrawn.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-5 and 9-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims disclosed that the stator core is made of a single piece stator core and yet in the same claims, the stator is disclosed to have a first and a second end surface being fixed together to form an annular shape. Is that stator made of one “single piece” or two pieces? Which one is it?

In order to advance prosecution in the merits, the Prior Art will be applied as best understood by the examiner.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Huang et al in view of Beard and Tang (US 5,811,905).

Huang et al discloses a stator core with a plurality of slots extending in axial direction (see figure 4b) and sets of coils are fitted into slots (see figure 6) and the total of slots is 72 or more (see figure 9). Also, the stator core is formed as a lamination of a plurality of sheet-shaped magnetic members with a plurality of teeth defining the slots and the stator been formed in annular shaped (see figures 4a-4c).

However, Huang et al does not disclose, explicitly that the stator core is made of two pieces fixed together.

On the other hand, Beard discloses for the purpose of providing an electrical machine with high reluctance path for armature reaction flux, stator laminations been made of a first end piece and second end piece (see figure 1), which are fixed together to complete the annular shape of the stator core.

However, neither Huang et al nor Beard disclose explicitly having two sets of three phase windings inside the slots.

On the other hand, Tang discloses for the purpose of producing a mutual coupling effects that are useful for torque production, two sets of three phase windings A, B, C and a, b, c , which are fitted in the slot of the stator (see figure 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design an alternator as disclosed by Huang et al and to modify the invention by using two end surfaces for the purpose of providing an electrical machine with high reluctance path for armature reaction flux as disclosed by Beard and to use two sets of phase windings fitted in the slot of a stator for the purpose of producing a mutual coupling effects that are useful for torque production and disclosed by Tang.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al, Beard and Tang as applied to claim 1 above, and further in view of Maruyama et al.

The combined stator discloses all of the elements above. However, the combined stator does not disclose that the center of air gaps of adjacent slot opening are not the same.

On the other hand, Maruyama et al discloses for the purpose of reducing eddy current losses, a stator with adjacent opening of center of air gaps of slot opening is not the same (see figures 41, 42, 44).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined stator as disclosed above and to have the center of air gaps not the same for the purpose of reducing eddy current losses as disclosed by Maruyama et al.

6. Claims 9, 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al Beard and Tang as applied to claim 1 above, and further in view of Muller.

The combined stator discloses all of the elements above. However, the combined stator does not disclose that the width of the teeth alternates in size.

On the other hand, Muller discloses for the purpose of facilitating the assembly of electrical machines, particularly, the insertion of windings in the stator slots, a stator wherein the width of the teeth alternate in size (see figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined stator as disclosed above and to

alternate the width in size for the purpose of facilitating the assembly of electrical machines as disclosed by Muller.

7. Claims 3-5, 12-14 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al, Beard, Tang, Muller and Maruyama as applied to claims 2, 11 and 15 above.

The combined stator discloses all of the elements above. However, the combined stator does not disclose the ranges of slot opening degrees.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to come with those optimum ranges that the applicant discloses, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In *re Aller*, 105 USPQ 233.

***Response to Arguments***

8. Applicant's arguments with respect to claims 1-5 and 9-18 have been considered but are moot in view of the new ground(s) of rejection.

***Allowable Subject Matter***

9. Claim 10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Specifically, the prior art fails to disclose that the contact surfaces of the stator core are connected as an annular shape and are formed by dividing a wide tooth among the teeth of alternating widths in a circumferential direction with an orthogonal surface.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julio C. Gonzalez whose telephone number is (703) 305-1563. The examiner can normally be reached on M-F (8AM-5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



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Jcg

November 12, 2003